

REMARKS

This is in response to the Office Action dated March 24, 2005. In view of the foregoing amendments and following representations, reconsideration is respectfully requested.

Initially, filed concurrently herewith, is an "Information Disclosure Statement" (IDS). The Examiner is requested to consider the cited reference and kindly acknowledge such consideration.

Next, on pages 2-3 of the Office Action, the drawings are objected to because reference numeral 123b of Fig. 11 is not described in the specification, and Fig. 8 contains a Japanese character. Accordingly, corrected drawing sheets (each labeled "Replacement Sheet") have been prepared and are submitted herewith. Note that the Japanese text has been removed from Fig. 8, and reference numeral 123b has been deleted in Fig. 11. Therefore, it is submitted that the drawing objections are now clearly obviated in view of the submission of the corrected drawing sheets.

Next, in response to the objection to the specification and to facilitate the Examiner's reconsideration of the application, the specification and abstract have been reviewed and revised in order to make a number of minor clarifying and other editorial amendments. Note that the changes to the abstract are submitted in the form of a substitute abstract. Copies of the amended portions of the specification, claims and abstract with changes

marked therein are attached and entitled "Version with Markings to Show Changes Made." Note that the specific informalities, identified by the Examiner on pages 3-4 of the Office Action, have been corrected by the amendments to the specification, thereby obviating the objection to the specification.

To further facilitate the Examiner's reconsideration of the application, original claims 1-61 have been canceled and replaced with new claims 62-70. Each of the new claims has been carefully drafted to ensure compliance with the requirements of 35 U.S.C. § 112, second paragraph. Note that the cancellation of the original claims renders moot the rejection of claim 7 under 35 U.S.C. 112, second paragraph and the objection to claims 15, 24, 34, 44 and 54.

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Next, on pages 5-7 of the Office Action, claims 1-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodruff et al. (U.S. Patent No. 6,309,520) in view of Greenspan (U.S. Patent No. 5,843,296).

It is submitted that the present invention, as embodied by new claims 62-70, now clearly distinguishes over the Woodruff and Greenspan references for the following reasons.

New independent claim 62 of the present invention is directed to a semiconductor wafer holder, which is best shown in Figs. 7A to 9 (see paragraphs 0060-0061). Note that the claimed wafer holder is designed to be

used in a "dip-type" electroplating system (see Fig. 4). Accordingly, during a plating operation, almost the entire wafer holder is immersed in an electrolytic solution in a plating bath 30. Therefore, the space that accommodates the electrode has to be sealed by the end projection 113c, which has a greater diameter than that of the semiconductor wafer 116, as well as the other end projection 113b, which has a smaller diameter than that of the semiconductor wafer 116, so as to prevent the electrode from contacting the electrolytic solution.

In claim 62 the second holding member, which includes the end projections 113b and 113c, is described as follows:

"a second holding member having an opening, and an annular packing comprising a first end projection for contacting a perimeter edge of a semiconductor wafer and a second end projection for contacting the first holding member".

Claim 62 also requires, *inter alia*:

"a ring clamp rotatable relative to the opening of the second holding member to clamp together the first holding member and the second holding member through the semiconductor wafer on the semiconductor wafer support surface and the packing."

With the novel structure recited in claim 62, uniform pressure can be applied to the seal or packing 13, and thereby the sealing capability is

markedly improved. Furthermore, in view of the fact that semiconductor wafer 116 is held by simply rotating the ring clamp 114, the operation of fitting the wafer 116 in the wafer holder is facilitated.

Woodruff discloses a reactor for plating metal onto a surface of a workpiece (wafer). As shown, for example, in Fig. 6, the reactor includes a ring contact assembly 85 which forms part of a rotor assembly 75 and provides electrical contact between the semiconductor wafer 25 and a source of electroplating power. A plurality of contacts 90 provide electrical contact between the wafer 25 and the contact assembly 85, and the contacts are separated from the electroplating environment interior of the reactor bowl 35 when the wafer is held and supported by the rotor assembly 75. A wafer guide 115 is provided to guide the wafer into position in the contact assembly 85. As described in col. 10, lines 6-18, the contacts 90 are resiliently deformed as the wafer 25 is "driven" against them. It is noted that the contacts may be formed as discrete members or as an integral assembly. However, there does not appear to be anything in the Woodruff reactor that corresponds to the second holding member having an opening and an annular packing having first and second end projections as required in claim 62. Further, there does not appear to be any structure that would correspond to the claimed ring clamp that is rotatable relative to the opening of the second holding member to clamp together the first and second holding members.

In the rejection, the Examiner generally asserts that Woodruff discloses a first holding member and a second holding member having the claimed annular packing. The Examiner further asserts that Woodruff "appears" to show a rotatable ring that would clamp. In support of this assertion, reference is made to figures 1-33 of the Woodruff patent. However, following a review of the Woodruff patent, it is submitted that the features set forth in claim 62 are not disclosed or suggested therein. Note that claim 62 specifically requires that the ring clamp, upon rotation relative to the opening of the second holding member, be operable to clamp together the first and second holding members.

Further, should the Examiner decide to reapply the Woodruff patent, then the Examiner is requested to specifically identify the structure in Woodruff that corresponds to the claimed second holding member, the annular packing, and the ring clamp.


In view of the above, it is submitted that Woodruff patent, taken alone or in combination with the Greenspan patent, does not disclose each and every limitation of claim 62. Thus, claim 62 is allowable over the collective teachings of the Woodruff and Greenspan patents. Note that claim 70 includes all of the limitations of claim 62, and thus is similarly allowable.

In view of the above, it is submitted that the present application is now clearly in condition for allowance. The Examiner therefore is requested to pass this case to issue.

In the event that the Examiner has any comments or suggestions of a nature necessary to place this case in condition for allowance, then the Examiner is requested to contact Applicant's undersigned attorney by telephone to promptly resolve any remaining matters.

Respectfully submitted,

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